



BioMap and Living Waters

Guiding Land Conservation for Biodiversity in Massachusetts

Core Habitats of Townsend

This report and associated map provide information about important sites for biodiversity conservation in your area.

This information is intended for conservation planning, and is not intended for use in state regulations.

Produced by:
Natural Heritage & Endangered Species Program
Massachusetts Division of Fisheries and Wildlife
Executive Office of Environmental Affairs
Commonwealth of Massachusetts

Produced in 2004



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* Depending on the location of Core Habitats, your city or town may not have all of these sections.

Spring Salamander
(*Gyrinophilus porphyriticus*)
Species of Special Concern



Funding for this project was made available by the Executive Office of Environmental Affairs, contributions to the Natural Heritage & Endangered Species Fund, and through the State Wildlife Grants Program of the US Fish & Wildlife Service.



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Introduction

In this report, the Natural Heritage & Endangered Species Program provides you with site-specific biodiversity information for your area. Protecting our biodiversity today will help ensure the full variety of species and natural communities that comprise our native flora and fauna will persist for generations to come.

The information in this report is the result of two statewide biodiversity conservation planning projects, **BioMap** and **Living Waters**. The goal of the BioMap project, completed in 2001, was to identify and delineate the most important areas for the long-term viability of terrestrial, wetland, and estuarine elements of biodiversity in Massachusetts. The goal of the Living Waters project, completed in 2003, was to identify and delineate the rivers, streams, lakes, and ponds that are important for freshwater biodiversity in the Commonwealth. These two conservation plans are based on documented observations of rare species, natural communities, and exemplary habitats.

What is a Core Habitat?

Both BioMap and Living Waters delineate **Core Habitats** that identify the most critical sites for biodiversity conservation across the state. Core Habitats represent habitat for the state's most viable rare plant and animal populations and include exemplary natural communities and aquatic habitats. Core Habitats represent a wide diversity of rare species and natural communities (see Table 1), and these areas are also thought to contain virtually all of the other described species in Massachusetts. Statewide, BioMap Core Habitats encompass 1,380,000 acres of uplands and wetlands, and Living Waters identifies 429 Core Habitats in rivers, streams, lakes, and ponds.



Core Habitats and Land Conservation

One of the most effective ways to protect biodiversity for future generations is to protect Core Habitats from adverse human impacts through land conservation. For Living Waters Core Habitats, protection efforts should focus on the **riparian areas**, the areas of land adjacent to water bodies. A naturally vegetated buffer that extends 330 feet (100 meters) from the water's edge helps to maintain cooler water temperature and to maintain the nutrients, energy, and natural flow of water needed by freshwater species.

In Support of Core Habitats

To further ensure the protection of Core Habitats and Massachusetts' biodiversity in the long-term, the BioMap and Living Waters projects identify two additional areas that help support Core Habitats.

In BioMap, areas shown as **Supporting Natural Landscape** provide buffers around the Core Habitats, connectivity between Core Habitats, sufficient space for ecosystems to function, and contiguous undeveloped habitat for common species. Supporting Natural Landscape was



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generated using a Geographic Information Systems (GIS) model, and its exact boundaries are less important than the general areas that it identifies. Supporting Natural Landscape represents potential land protection priorities once Core Habitat protection has been addressed.

In Living Waters, *Critical Supporting Watersheds* highlight the immediate portion of the watershed that sustains, or possibly degrades, each freshwater Core Habitat. These areas were also identified using a GIS model. Critical Supporting Watersheds represent developed and undeveloped lands, and can be quite large. Critical Supporting Watersheds can be helpful in land-use planning, and while they are not shown on these maps, they can be viewed in the Living Waters report or downloaded from www.mass.gov/mgis.

Understanding Core Habitat Species, Community, and Habitat Lists

What's in the List?

Included in this report is a list of the species, natural communities, and/or aquatic habitats for each Core Habitat in your city or town. The lists are organized by Core Habitat number.

For the larger Core Habitats that span more than one town, the species and community lists refer to the entire Core Habitat, not just the portion that falls within your city or town. For a list of all the state-listed rare species within your city or town's boundary, whether or not they are in Core Habitat, please see the town rare species lists available at www.nhesp.org.

The list of species and communities within a Core Habitat contains only the species and

Table 1. The number of rare species and types of natural communities explicitly included in the BioMap and Living Waters conservation plans, relative to the total number of native species statewide.

BioMap		
Biodiversity Group	Species and Verified Natural Community Types	
	Included in BioMap	Total Statewide
Vascular Plants	246	1,538
Birds	21	221 breeding species
Reptiles	11	25
Amphibians	6	21
Mammals	4	85
Moths and Butterflies	52	An estimated 2,500 to 3,000
Damselflies and Dragonflies	25	An estimated 165
Beetles	10	An estimated 2,500 to 4,000
Natural Communities	92	> 105 community types
Living Waters		
Biodiversity Group	Species	
	Included in Living Waters	Total Statewide
Aquatic Vascular Plants	23	114
Fishes	11	57
Mussels	7	12
Aquatic Invertebrates	23	An estimated > 2500

natural communities that were explicitly included in a given BioMap or Living Waters Core Habitat. Other rare species or examples of other natural communities may fall within the Core Habitat, but for various reasons are not included in the list. For instance, there are a few rare species that are omitted from the list or summary because of their particular sensitivity to the threat of collection. Likewise, the content of many very small Core Habitats are not described in this report or list, often because they contain a single location of a rare plant



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species. Some Core Habitats were created for suites of common species, such as forest birds, which are particularly threatened by habitat fragmentation. In these cases, the individual common species are not listed.

What does 'Status' mean?

The Division of Fisheries and Wildlife determines a status category for each rare species listed under the Massachusetts Endangered Species Act, M.G.L. c.131A, and its implementing regulations, 321 CMR 10.00. Rare species are categorized as Endangered, Threatened, or of Special Concern according to the following:

- **Endangered** species are in danger of extinction throughout all or a significant portion of their range or are in danger of extirpation from Massachusetts.
- **Threatened** species are likely to become Endangered in Massachusetts in the foreseeable future throughout all or a significant portion of their range.
- **Special Concern** species have suffered a decline that could threaten the species if allowed to continue unchecked or occur in such small numbers or with such restricted distribution or specialized habitat requirements that they could easily become Threatened in Massachusetts.

In addition, the Natural Heritage & Endangered Species Program maintains an unofficial **watch list** of plants that are tracked due to potential conservation interest or concern, but are not regulated under the Massachusetts Endangered Species Act or other laws or regulations. Likewise, described natural communities are not regulated any laws or regulations, but they can help to identify ecologically important areas that are worthy of protection. The status of natural

Legal Protection of Biodiversity

BioMap and Living Waters present a powerful vision of what Massachusetts would look like with full protection of the land that supports most of our biodiversity. To create this vision, some populations of state-listed rare species were deemed more likely to survive over the long-term than others.

Regardless of their potential viability, all sites of state-listed species have full legal protection under the Massachusetts Endangered Species Act (M.G.L. c.131A) and its implementing regulations (321 CMR 10.00). Habitat of state-listed wildlife is also protected under the Wetlands Protection Act Regulations (310 CMR 10.37 and 10.59). The **Massachusetts Natural Heritage Atlas** shows **Priority Habitats**, which are used for regulation under the Massachusetts Endangered Species Act and Massachusetts Environmental Policy Act (M.G.L. c.30) and **Estimated Habitats**, which are used for regulation of rare wildlife habitat under the Wetlands Protection Act. For more information on rare species regulations, see the *Massachusetts Natural Heritage Atlas*, available from the Natural Heritage & Endangered Species Program in book and CD formats.

BioMap and Living Waters are conservation planning tools and do not, in any way, supplant the Estimated and Priority Habitat Maps which have regulatory significance. Unless and until the combined BioMap and Living Waters vision is fully realized, we must continue to protect all populations of our state-listed species and their habitats through environmental regulation.

communities reflects the documented number and acreages of each community type in the state:

- **Critically Imperiled** communities typically have 5 or fewer documented sites or have very few remaining acres in the state.
- **Imperiled** communities typically have 6-20 sites or few remaining acres in the state.
- **Vulnerable** communities typically have 21-100 sites or limited acreage across the state.
- **Secure** communities typically have over 100 sites or abundant acreage across the state; however excellent examples are identified as Core Habitat to ensure continued protection.



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Understanding Core Habitat Summaries

Following the BioMap and Living Waters Core Habitat species and community lists, there is a descriptive summary of each Core Habitat that occurs in your city or town. This summary highlights some of the outstanding characteristics of each Core Habitat, and will help you learn more about your city or town's biodiversity. You can find out more information about many of these species and natural communities by looking at specific *fact sheets* at www.nhesp.org.

Next Steps

BioMap and Living Waters were created in part to help cities and towns prioritize their land protection efforts. While there are many reasons to conserve land – drinking water protection, recreation, agriculture, aesthetics, and others – BioMap and Living Waters Core Habitats are especially helpful to municipalities seeking to protect the rare species, natural communities, and overall biodiversity within their boundaries. Please use this report and map along with the rare species and community fact sheets to appreciate and understand the biological treasures in your city or town.

Protecting Larger Core Habitats

Core Habitats vary considerably in size. For example, the average BioMap Core Habitat is 800 acres, but Core Habitats can range from less than 10 acres to greater than 100,000 acres. These larger areas reflect the amount of land needed by some animal species for breeding, feeding, nesting, overwintering, and long-term survival. Protecting areas of this size can be

very challenging, and requires developing partnerships with neighboring towns.

Prioritizing the protection of certain areas within larger Core Habitats can be accomplished through further consultation with Natural Heritage Program biologists, and through additional field research to identify the most important areas of the Core Habitat.

Additional Information

If you have any questions about this report, or if you need help protecting land for biodiversity in your community, the Natural Heritage & Endangered Species Program staff looks forward to working with you.

Contact the Natural Heritage & Endangered Species Program:

by Phone 508-792-7270, Ext. 200

by Fax: 508-792-7821

by Email: natural.heritage@state.ma.us.

by Mail: North Drive
Westborough, MA 01581

The GIS datalayers of BioMap and Living Waters Core Habitats are available for download from MassGIS: www.mass.gov/mgis

Check out www.nhesp.org for information on:

- Rare species in your town
- Rare species fact sheets
- BioMap and Living Waters projects
- Natural Heritage publications, including:
 - * Field guides
 - * Natural Heritage Atlas, and more!



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BioMap: Species and Natural Communities

Townsend

Core Habitat BM100

Invertebrates

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Spatterdock Darner	<i>Aeshna mutata</i>	Special Concern

Vertebrates

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Blanding's Turtle	<i>Emydoidea blandingii</i>	Threatened
Marbled Salamander	<i>Ambystoma opacum</i>	Threatened
Wood Turtle	<i>Clemmys insculpta</i>	Special Concern

Core Habitat BM126

Invertebrates

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Brook Snaketail	<i>Ophiogomphus aspersus</i>	Special Concern

Vertebrates

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Blanding's Turtle	<i>Emydoidea blandingii</i>	Threatened
Spotted Turtle	<i>Clemmys guttata</i>	Special Concern
Wood Turtle	<i>Clemmys insculpta</i>	Special Concern

Core Habitat BM185

Vertebrates

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
American Bittern	<i>Botaurus lentiginosus</i>	Endangered

Core Habitat BM256

Plants

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Climbing Fern	<i>Lygodium palmatum</i>	Special Concern



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BioMap: Species and Natural Communities

Townsend

Invertebrates

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Brook Snaketail	<i>Ophiogomphus aspersus</i>	Special Concern
Spatterdock Darner	<i>Aeshna mutata</i>	Special Concern
Zebra Clubtail	<i>Stylurus scudderi</i>	Endangered

Vertebrates

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Blanding's Turtle	<i>Emydoidea blandingii</i>	Threatened
Blue-spotted Salamander	<i>Ambystoma laterale</i>	Special Concern
Four-toed Salamander	<i>Hemidactylium scutatum</i>	Special Concern
Spotted Turtle	<i>Clemmys guttata</i>	Special Concern
Wood Turtle	<i>Clemmys insculpta</i>	Special Concern



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BioMap: Core Habitat Summaries

Townsend

Core Habitat BM100

This Core Habitat encompasses a long river corridor, including portions of the Nashua and Nissitissit Rivers, and forested uplands to the west. With its meandering streams, diverse riparian wetlands, emergent wetlands, small wet meadows, forested and shrub swamps, and upland forests and fields, this area provides key habitats for rare turtles and salamanders, as well as several rare dragonflies. While portions of this Core Habitat are protected as conservation land, additional conservation priorities include further protection of the land immediately adjacent to the Nissitissit and Nashua Rivers and their tributaries, protection of the vernal pools and surrounding uplands, and minimizing road mortality of rare turtles by curbing new road construction throughout the area.

Invertebrates

This large and minimally fragmented complex of streams, ponds, and other wetlands in the vicinity of Stewart Brook and Gulf Brook in the northwest corner of Pepperell is important habitat for rare dragonflies such as the Spatterdock Darner. Most of the habitat appears to be unprotected. Other rare dragonflies that may inhabit this area include the Brook Snaketail and the Zebra Clubtail. This Core Habitat is in close proximity to Core Habitats along the Squannacook River in Townsend and along the Squannacook River in Shirley and Groton, which allows for dispersal of dragonflies between these sites.

Vertebrates

This Core Habitat contains significant habitat for Wood and Blanding's Turtles along the floodplain of the Nissitissit and Nashua Rivers and in adjacent uplands and associated wetlands. The western portion of this Core Habitat contains Marbled Salamander habitat in the vicinity of Stewart Brook in Pepperell and in the numerous vernal pools of the area. This area may support the northernmost population of this species in Massachusetts.

Core Habitat BM126

This Core Habitat encompasses streams and diverse riparian wetlands and uplands along the upper Squannacook River and up into its headwater tributaries. This is a key site for dragonfly diversity in Massachusetts, and supports rare species such as the Brook Snaketail dragonfly. The area also provides significant and connected habitats for the rare Blanding's and Wood Turtles. Much of this important habitat appears to be unprotected.

Invertebrates

This Core Habitat includes a large and minimally fragmented network of streams and small rivers, including Locke Brook, Walker Brook, Mason Brook, Trapfall Brook, Pearl Hill Brook, Bixby Brook, and the Squannacook River, all of which are important habitat for dragonflies such as the rare Brook Snaketail. This site is one of the hotspots for dragonfly diversity in Massachusetts and most of the habitat appears to be unprotected. Other rare dragonflies that may inhabit this area include the Zebra Clubtail and the Spatterdock Darner. This Core Habitat is in close proximity to Core Habitat in the vicinity of Stewart Brook and Gulf Brook in Pepperell, and Core Habitat along the Squannacook River in Shirley and Groton, which allows for dispersal of dragonflies between these sites.



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BioMap: Core Habitat Summaries

Townsend

Vertebrates

Significant habitat for Wood and Blanding's Turtles occurs here in riverine habitats, and associated wetlands and uplands along the Squannacook River and its headwaters. These populations are no doubt extensions of those in the lower Squannacook and Nashua Rivers. Significant habitat for Spotted Turtles is likely present within this Core Habitat as well.

Core Habitat BM185

Vertebrates

This Core Habitat encompasses a freshwater marsh along Meadow Road in Townsend that provides breeding, feeding, and migration habitat for American Bitterns, a rare species of marsh bird in Massachusetts.

Core Habitat BM256

This Core Habitat encompasses important habitats for several rare species of turtles and salamanders along the Nashua and Squannacook Rivers. It is also home to many dragonflies, including the Endangered Spatterdock Darner and Zebra Clubtail, as well as the unusual Climbing Fern. Further conservation efforts should seek to connect currently protected yet disjunct tracts of land.

Plants

This Core Habitat supports a very large occurrence of the Climbing Fern, one of the more unusual-looking fern species in Massachusetts.

Invertebrates

This Core Habitat includes a 6-km stretch of the Squannacook River in Townsend, Shirley, and Groton, that along with associated smaller streams and ponds is important habitat for rare dragonflies such as the Spatterdock Darner, the Zebra Clubtail (known to occur here for over 30 years), and the Brook Snaketail (known to occur here for over 65 years). While much of the habitat is protected within the bounds of the Squannacook River Wildlife Management Area, conservation of currently unprotected lands within this Core Habitat is desirable to increase the amount of contiguous protected habitat and decrease its fragmentation, thus helping to ensure the long-term viability of the rare species inhabiting the area. This Core Habitat is in close proximity to the Core Habitat along the Squannacook River in Townsend, and the Core Habitat in the vicinity of Stewart Brook and Gulf Brook in Pepperell, which allows for dispersal of dragonflies between these sites.

Vertebrates

The floodplains of the Squannacook and Nashua Rivers and adjacent wetlands and uplands provide important habitat for Blanding's and Wood Turtles, especially in areas with meandering channels, wetlands, and small pools created by old river oxbows, and in adjacent forests and fields. These mosaics of habitats also provide significant habitat for Spotted Turtles, Blue-spotted Salamanders, and Four-toed Salamanders, especially in shallow wetlands, wooded swamps, seasonal pools, and adjacent forested uplands. Protection efforts should seek to establish unbroken riparian corridors along both rivers and their floodplains.



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Living Waters: Species and Habitats

Townsend

Core Habitat LW356

Exemplary Habitats

Common Name

Scientific Name

Status

Invertebrate Habitat

Invertebrates

Common Name

Scientific Name

Status

Triangle Floater

Alasmidonta undulata

Special Concern

Fishes

Common Name

Scientific Name

Status

Bridle Shiner

Notropis bifrenatus

Special Concern



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Living Waters: Core Habitat Summaries

Townsend

Core Habitat LW356

A significant portion of the 15 mile-long Squannacook River falls within conservation ownership, resulting in large, undisturbed tracts of adjacent upland and riverfront forests. The river flows with moderate speed over beds of fine sands and gravels with a few intermittent cobbles and boulders. Together these factors help explain the high-quality habitats for many species of freshwater mussels, insects, and fishes that are found within this Core Habitat.

The Squannacook River supports six of the state's twelve freshwater mussel species, including the rare Triangle Floater. This Core Habitat also includes habitats for several species of state-listed dragonflies and the area is considered to be one of the richest in regards to dragonfly diversity in the state. These aquatic insects are good indicators of ecosystem health, suggesting that this Core Habitat provides high-quality freshwater habitats for other underwater species as well.

In Harbor Pond, there is one of only a few known populations of Bridle Shiner in the Nashua River Watershed. This fish Species of Special Concern is thought to be in decline in eastern Massachusetts as it was found at only 23% of its former sites in recent surveys. The Bridle Shiner is typically found in well-vegetated, quiet waters. It feeds on small aquatic insects and other invertebrates, and is an important part of the freshwater ecosystem as prey for larger fishes. The Bridle Shiner population in Harbor Pond has persisted at least since 1952.

Overall, this Core Habitat provides an excellent example of the importance of riparian land protection for the conservation of Massachusetts' freshwater biodiversity.



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To learn more about the Natural Heritage & Endangered Species Program and the Commonwealth's rare species, visit our web site at: www.nhesp.org.